

What is claimed is:

1. A substrate processing chamber component comprising:
 - (a) a structure composed of aluminum oxide and having a roughened surface with a roughness average of from about 150 to about 450 microinches; and
 - (b) a plasma sprayed ceramic coating deposited on the roughened surface of the structure, the plasma sprayed ceramic coating composed of aluminum oxide.
2. A component according to claim 1 wherein the plasma sprayed ceramic coating comprises a textured exposed surface having a roughness average of from about 150 to about 450 microinches.
3. A component according to claim 1 wherein the plasma sprayed ceramic coating comprises a porosity of from about 5% to about 10%.
4. A component according to claim 1 wherein the plasma sprayed ceramic coating comprises a thickness of from about 1 mil to about 8 mils.
5. A component according to claim 1 wherein the component comprises a domed enclosure wall.
6. A component according to claim 5 wherein the domed enclosure wall comprises at least a portion of a ceiling.
7. A component according to claim 1 wherein the plasma sprayed ceramic coating is adapted to be exposed to an energized gas in an etching chamber or a chemical vapor deposition chamber.
8. A substrate processing chamber comprising the component of claim 1, the substrate processing chamber comprising a substrate support, a process gas supply, a plasma generator to energize the process gas, and a gas exhaust.

9. A domed enclosure wall for a substrate processing chamber, the domed enclosure wall comprising:

- (a) a structure composed of aluminum oxide, the structure having a surface; and
- (b) a plasma sprayed ceramic coating deposited on the surface of the structure, the plasma sprayed ceramic coating being composed of aluminum oxide.

10. A wall according to claim 9 wherein the surface of the structure is roughened to have a roughness average of from about 150 to about 450 microinches.

11. A wall according to claim 9 wherein the structure comprises at least a portion of a chamber ceiling.

12. A method of fabricating a component of a plasma processing chamber, the method comprising:

- (a) providing a preform composed of aluminum oxide;
- (b) roughening a surface of the preform to form a roughened surface having a roughness average of from about 150 to about 450 microinches; and
- (c) depositing a plasma sprayed ceramic coating on the roughened surface of the preform, the plasma sprayed ceramic coating composed of aluminum oxide.

13. A method according to claim 12 wherein (a) comprises forming a dome shaped structure.

14. A method according to claim 12 wherein (b) comprises grit blasting the surface of the structure to form the roughened surface.

15. A method according to claim 12 wherein (c) comprises injecting an aluminum oxide powder through a plasma arc maintained at a temperature that is sufficiently high to maintain the aluminum oxide material in a molten state until it impacts the preform.

16. A method of fabricating a component of a substrate processing chamber, the method comprising:

- (a) providing a preform composed of aluminum oxide;
- (b) roughening a surface of the preform to form a roughened surface having a roughness average of from about 150 to about 450 microinches;
- (c) depositing a first plasma sprayed ceramic coating over at least a portion of the roughened surface, the first plasma sprayed ceramic coating composed of aluminum oxide; and
- (d) depositing a second plasma sprayed ceramic coating over at least a portion of the roughened surface, the second plasma sprayed ceramic coating composed of aluminum oxide.

17. A method according to claim 16 wherein (a) comprises forming a dome shaped structure.